

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 85

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

MAILED

SEP 23 1999

PAT.&T.M. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

RONALD F. ZIOLO
Junior Party¹

v.

JOSEPH MORT and MARY A.
MACHONKIN
Junior Party²

v.

RONALD F. ZIOLO
Junior Party³

v.

DONALD R. HUFFMAN and WOLFGANG
KRATSCHMER
Senior Party⁴

Interference No. 103,281

REDECLARATION

¹ Patent Number 5,232,810, granted August 3, 1993, based on Application 07/961,984, filed October 16, 1992. Assignor to Xerox Corporation, Stamford, Connecticut. (Ziolo I).

² Patent Number 5,114,477, granted May 19, 1992, based on Application 07/754,084, filed September 3, 1991. Assignor to Xerox Corporation, Stamford, Connecticut.

³ Patent Number 5,188,918, granted February 23, 1993, based on Application 07/709,734, filed June 3, 1991. Assignor to Xerox Corporation, Stamford, Connecticut. (Ziolo II).

⁴ Application 07/580,246, filed September 10, 1990. No Assignee of record.

Interference No. 103,281

For the reasons stated in the Final Decision (Paper Number 84), mailed concurrently herewith, in view of our *sua sponte* granting-in-part of the junior parties' motion under 37 C.F.R. 1.633(c)(4), Interference Number 103,281 is redeclared as follows:

The cases involved in this interference are:

Junior Party

Patentees: Joseph Mort and Mary A. Machonkin

Addresses: 1209 Gerrads Cross, Webster, NY 14580
816 Ivy Court, Webster, NY 14580

Serial No.: 07/754,084 filed 09/03/91, now U.S. Patent No.
5,114,477, issued 05/19/92

For: LIQUID INK COMPOSITIONS

Assignee: Xerox Corporation, Stamford, CT

Attorneys of Record: Ronald Zibelli, John E. Beck, Sheldon F.
Raizes and Eugene Palazzo

Associate Attorneys: None

Accorded Benefit of: None

Address: Ronald Zibelli
Xerox Corporation
Xerox Square - 020
Rochester, NY 14644

Junior Party

Patentees: Ronald F. Ziolo

Address: 1206 Imperial Drive, Webster, NY 14580

Serial No.: 07/709,734 filed 06/03/91, now U.S. Patent No.
5,188,918, issued 05/19/92

Interference No. 103,281

For: LIQUID INK COMPOSITIONS

Assignee: Xerox Corporation, Stamford, CT

Attorneys of Record: Ronald Zibelli, John E. Beck, Sheldon F.
Raizes and Eugene Palazzo

Associate Attorneys: None

Accorded Benefit of: None

Address: Ronald Zibelli
Xerox Corporation
Xerox Square - 020
Rochester, NY 14644

Senior Party

Applicants: Donald R. Huffman and Wolfgang Kratschmer

Addresses: 6633 E. Koralee, Tucson, Az 85710
9 Schabisch Hall St., Gaiberg, Wets Germany D-6901

Serial No.: 07/580,246

For: NEW FORM OF CARBON

Assignee: None

Attorneys of Record: John F. Scully, Anthony C. Scott, Stephen
D. Murphy, Leopold Presser, William C.
Roch, William E. McNulty, Kenneth L. King,
Frank S. DiGiglio and Paul J. Esatto, Jr.

Associate Attorney: None

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COUNT 1

Substantially pure solid C_{60} or C_{70} , or

a pigment composition comprising a fullerene, or

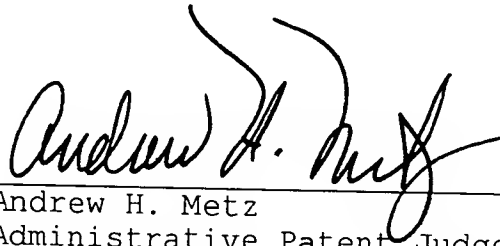
a toner composition comprising a fullerene.

The claims of the parties which correspond to Count 1
are:

Mort et al.: Claims 1 through 21

Ziolo: Claims 1 through 18

Huffman et al.: Claims 45 through 77 and 79 through 180

A handwritten signature in black ink, appearing to read "Andrew H. Metz", is written over a horizontal line.

Andrew H. Metz
Administrative Patent Judge
(703) 308-9797

gjh

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 84

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

MAILED

SEP 23 1999

PAT.&T.M. OFFICE
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Interference No. 103,281

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⁴ Application 07/580,246, filed September 10, 1990. No Assignee of record.

Interference No. 103,281

Before METZ, SCHAFER and LEE, Administrative Patent Judges.

METZ, Administrative Patent Judge.

FINAL DECISION

The subject matter contested in this interference is directed to particular compounds which are a new, third form or allotrope of carbon known, variously, by their empirical formulae C_{60} or C_{70} and also known by the name fullerenes or so-called "Bucky Balls", and to pigment and toner compositions wherein the pigment or toner comprises a fullerene.

The specific interfering subject matter contested by the parties is defined by the sole count in this interference, Count 1, which is set forth below:

COUNT 1

Substantially pure solid C_{60} or C_{70} , or

a pigment composition comprising a fullerene, or

a toner composition comprising a fullerene.

The claims of the parties which correspond to Count 1 are:

Ziolo I: Claims 1 through 6

Mort et al.: Claims 1 through 21

Ziolo II: Claims 1 through 18

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Huffman et al.: Claims 45 through 77 and 79 through 180⁵

BACKGROUND

This interference was declared on December 2, 1993. On January 14, 1994, the junior party filed a paper captioned "EMERGENCY MOTION TO INVOKE THE SUPERVISORY AUTHORITY OF THE EXAMINER IN CHIEF OR THE BOARD OF PATENT APPEALS AND INTERFERENCES RE CLEARLY IMPROPERLY DECLARED INTERFERENCE" (Paper Number 8) wherein the junior party challenged the propriety of the declaration of this interference on various grounds. The senior party filed a paper captioned "RESPONSE TO EMERGENCY MOTION TO INVOKE THE SUPERVISORY AUTHORITY OF THE EXAMINER IN CHIEF OR THE BOARD OF PATENT APPEALS AND INTERFERENCES RE CLEARLY IMPROPERLY DECLARED INTERFERENCE; REQUEST FOR BIFURCATION AND IMMEDIATE RULING" (Paper Number 9). In an order mailed on February 16, 1994, the Administrative Patent Judge (APJ), in the

⁵ Huffman et al. have proposed to cancel claims 52, 79, 82 and 87 from their involved application in order to "facilitate the analysis" of the issues presented (SB 16). Nevertheless, ex parte prosecution in an application involved in an interference is suspended upon declaration of the interference and amendments in the involved application will not be entered or even considered without the prior consent of the APJ. See 37 C.F.R. § 1.615 (a) and (b). Huffman et al. neither requested our consent to file an amendment canceling said claims nor filed a miscellaneous motion under 37 C.F.R. § 1.635 proposing to cancel said claims. We shall not grant our consent *nunc pro tunc*. Accordingly, claims 52, 79, 82 and 87, remain in Huffman et al.'s involved application and remain as claims designated as corresponding to Count 1.

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performance of his interlocutory duties, informed the parties that Paper Numbers 8 and 9 would be treated jointly as a petition under 37 C.F.R. § 1.644(a)(3) and were thereafter forwarded to the Office of the Commissioner for a decision on the merits of the petition.

In the decision on the parties' petition, issued on March 21, 1994, all the relief sought by the parties in their petition was denied. Specifically, the decision noted at page 5:

A review of the notice of declaration (Paper No. 2) and the records of the three patents and application involved in this interference, shows that the declaration is regular on its face.

With respect to the parties' contention that no claims of the parties were directed to "interfering subject matter", the decision further stated at page 5:

Since the subject matter claimed by the parties facially appears to be related, it is not manifestly apparent at this stage of the interference that the parties are not claiming the same patentable invention within the meaning of 37 CFR § 1.601(n).

Thereafter, it was specifically noted that the decision did not preclude the parties "from challenging the propriety of the interference in a motion or motions under 37 CFR § 1.633." (see page 6 of Paper Number 12). The decision concluded at page 11 by finding:

This interference will most expeditiously proceed if all relevant issues are raised during the preliminary motion period.

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After receiving the decision on petition, the parties filed various preliminary motions.

On June 8, 1995, this merits panel issued a decision on the parties' preliminary motions (Paper Number 38). Therein, we, *inter alia*, denied the motion for judgment on the grounds that the parties agreed there is no interference-in-fact; dismissed the junior party motion for immediate termination of the interference for lack of jurisdiction; dismissed a motion to substitute the count; denied the junior party motion to designate certain claims as not corresponding to the count; and, granted the senior party motion for benefit. We also placed the junior party under an order to show cause pursuant to 37 C.F.R. § 1.640(d)(3) and entered a *sua sponte* holding that all Huffman et al.'s claims corresponding to the count were directed to subject matter unpatentable under 35 U.S.C. § 101.

In denying the parties' motion for judgment on the grounds of no interference-in-fact, we performed the analysis required under 37 C.F.R. § 1.601(n) for determining whether or not the parties' claimed inventions were for the "same patentable invention" (see pages 4 through 6 of Paper Number 38). Specifically, we found that, assuming the junior parties' ink or toner composition claims were "prior art" with respect to the senior party, "the junior parties' toner compositions comprising C₆₀ or C₇₀ and the junior parties' ink composition comprising a

liquid vehicle and a fullerene would have anticipated (35 USC 102) or would have at least rendered obvious to a person of ordinary skill in the art (35 USC 103) the subject matter encompassed by the senior party's claims corresponding to the count." Alternatively, we found, assuming the senior party's claims to various fullerenes are "prior art" with respect to the junior parties' claims, the junior parties' toner and ink compositions would have been *prima facie* obvious to a person of ordinary skill in the art in light of age-old knowledge that carbon blacks are useful pigments or colorants for inks and toners.

We relied upon evidence in the nature of The Kirk-Othmer Encyclopedia of Chemical Technology, Volumes 11 and 15 (Second Edition, 1966), to support our conclusion that, at the time the junior party's applications which matured to become the involved patents in this interference were filed, carbon blacks would have been expected to be useful pigments or colorants. We also relied on Volume 6 of The Kirk-Othmer Encyclopedia of Chemical Technology (Third Edition, 1979) for the definition of the term "colorant". From all the above, we concluded that a person of ordinary skill in the art "would have expected fullerenes, an allotrope of elemental carbon derived from soot, in more or less pure form, to be useful colorants or pigments for inks or toners."

In response to the decision on motions, the junior party requested a final hearing to "review all the motions denied, dismissed, or rendered moot, including the Junior Party motions identified in the above Decision as 1), 2), 3) and 4)." (see Paper Number 40). In response to the *sua sponte* finding, the senior party filed a response contesting the basis for our finding on both procedural and substantive grounds (see Paper Number 46). The junior parties exercised their right to respond to the senior party's response to the *sua sponte* finding and filed a paper expressing their views on said finding (see Paper Number 51).

In Paper Number 56, we, *inter alia*, adhered to our *sua sponte* finding that all the claims of the senior party designated as corresponding to Count 1 were unpatentable and placed the senior party under an order to show cause pursuant to 37 C.F.R. § 1.640(d)(1). The senior party responded to the order to show cause by requesting a final hearing to review our *sua sponte* holding and other issues (Paper Number 58). In Paper Number 60, mailed December 18, 1996, we set forth the issues which would be reviewed at final hearing. Both parties filed briefs and the junior party filed a reply brief. A final hearing was held on May 20, 1998, which hearing was attended only by the senior party's legal representatives.

OPINION

Before we begin our analysis of the parties' respective positions on the issues before us, we note that the requirements for the parties' briefs are set forth in 37 CFR 1.656(b)(1) through 1.656(b)(8). Therein, the rules require, *inter alia*, citations to the "cases, statutes, other authorities and parts of the record" on which the parties rely to support the positions taken by them in their briefs. 37 CFR 1.656(b)(6). Moreover, 37 CFR 1.656(b)(5) requires:

[a] statement of the facts, in numbered paragraphs, relevant to the issues presented for decision with appropriate references to the record (emphasis added)

Broad narratives by the parties in their briefs without specific citations to that portion of their record or exhibits which specifically support the positions taken by them in their briefs do not aid us in our resolution of the issues.

For example, the junior parties' position that certain motions concerning jurisdiction of this Board to decide the case before us and concerning whether or not there exists an interference-in-fact "were timely raised, are supported by both Partys [sic], were never decided, and are re-raised here" (JB 8)⁶ is without basis in

⁶ All reference to the junior parties' brief and reply brief are hereinafter referred to as "JB" and "JRB", respectively, followed by the relevant page numbers. The senior party's brief shall be hereinafter referred to as "SB" followed by the relevant page numbers.

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the record. The senior party's representation that we have refused to address the issue of jurisdiction is also without factual basis and lacks merit (SB, page 12).

The senior party's continued argument (SB 3 through 5, 11, 30, 34 and 39) that virtually all research in the field of fullerenes conducted after they developed their process for preparing fullerenes was enabled only because their process put fullerenes in the hands of researchers is also absolutely without foundation in the record. Mere reference to the various articles in this record dealing with the discovery and further characterization of fullerenes establishes that the various researchers used conventional, available analytical techniques in a substantial number of cases to identify and characterize fullerenes. The senior party has simply not directed us to evidence in the record which substantiates their mere argument. More importantly, the subject matter of Count 1 which defines the subject matter contested in this proceeding is not directed to a process for preparing fullerenes.

JURISDICTION

The junior parties argue that we have never decided the issue of jurisdiction of the Board and the senior party argues that we have refused to address the issue of jurisdiction. The arguments are misplaced since the parties do not dispute that when properly declared the Board has jurisdiction to conduct an interference proceeding, that the issue of whether the interference was properly

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declared was submitted to the Commissioner via petition, and that the Commissioner has ruled that this interference was properly declared.

We do not sit to review the Commissioner's decision on petition. The parties' recourse would have lied in a civil action for a writ of mandamus.

INTERFERENCE-IN-FACT

After receiving the decision on petition (Paper Number 12), the parties availed themselves of the various relief suggested therein. Specifically, the parties filed various preliminary motions, including a motion for judgment under 37 C.F.R. § 1.633(b) on the grounds that there was no interference-in-fact (see Paper Numbers 17 and 33). In Paper Number 38, this merits panel rendered its decision on the various preliminary motions filed by the parties, including the motion for no interference-in-fact, which was denied.

In denying the motion under 37 C.F.R. § 1.633(b), we set forth the proper test for determining whether an interference-in-fact exists. Specifically, we noted that when two or more parties had one or more allowable claims in their respective patents or applications which were directed to the "same patentable invention" as the claims of another party, an interference-in-fact existed. Stated another way, we found that it was by comparing the parties' various claims not the count, which determined whether or not an interference-in-fact existed. Thereafter, we went through specific, step-by-step

analysis according to the rules and analyzed the parties' various claims designated as corresponding to the count. We found that:

it is apparent that the parties are claiming the "same patentable invention" in the sense of 37 CFR 1.601(n). Specifically, assuming that the junior parties' ink or toner compositions are "prior art" with respect to the senior party's claims corresponding to the count, the junior parties' toner compositions comprising C₆₀ or C₇₀ and the junior parties' ink composition comprising a liquid vehicle and a fullerene would have anticipated (35 USC 102) or would have at least rendered obvious to a person of ordinary skill in the art (35 USC 103) the subject matter encompassed by the senior party's claims corresponding to the count.

Alternatively, assuming the senior party's claims to various fullerenes are "prior art" with respect to the junior parties' claims, the junior parties' toner and ink compositions would have been *prima facie* obvious to a person of ordinary skill in the art in light of age-old knowledge that carbon blacks are useful pigments or colorants for inks and toners. See, for example, The Kirk-Othmer Encyclopedia of Chemical Technology, Volume 11, "Inks" (Second Edition, 1966), wherein it is disclosed at page 611 that:

Printing ink is a mixture of coloring matter dispersed or dissolved in a vehicle or carrier, which forms a fluid or paste which can be printed on a substrate and dried. The colorants used are generally pigments, toners, and dyes, or combinations of these materials, which are selected to provide color contrast with the background on which the ink is printed.

and at page 631 that:

The electrostatic ink, also called an electrostatic toner, is a powder composed of pigment dispersed in a resin.

A "colorant" is described at page 529 in Volume 6 of The Kirk-Othmer Encyclopedia of Chemical Technology (Third Edition, 1979) as a substance "added to materials to produce color effects" and that such substances are usually classified as "dyes (qv) or pigments (qv)." Finally, in Volume 15 of the Second Edition of Kirk-Othmer, at page 542, the principal black pigments are described as "those which consist of elemental carbon in a more or less pure form" and include carbon blacks and lampblacks. Thus, we consider that a person possessing ordinary skill in the art would have expected fullerenes, an allotrope of elemental carbon derived from soot, in more or less pure form, to be useful colorants or pigments for inks or toners. Indeed, during the prosecution of the senior party's involved application in this interference and in response to the examiner's allegation that the fullerenes possessed no known utility, the senior party presented a declaration including as an exhibit drawings by one of the inventors which were "paintings" made by using fullerenes as the pigment in a carrier (see Paper Number 17). Accordingly, we agree with the primary examiner's determination that the claims of the junior parties and the claims of the senior party designated as corresponding to the count define the "same patentable invention" in the sense of 37 CFR 1.601(n).

Rather than address our analysis and the specific underlying findings which served as the factual basis for our conclusions, the parties focus on facts and theories which are not relevant to the issue before us. For example, the junior parties argue that: because the parties agree that there is no interference-

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in-fact, there is no interference-in-fact and this interference should not have been declared (JB 19); because the senior party never claimed nor ever intended to claim inks or toners including fullerenes there was never any basis for declaring this interference (JB 20, 22); the senior party's claims designated as corresponding to the count include claims which were under rejection and should not have been included in the interference (JB 14, 21); and, the count in this interference is an improper and unpatentable count (JB 21, 22).

The senior party repeats its contention that it agrees with the junior party that there is no interference-in-fact between the parties (SB 59). The senior party also challenges our analysis from our decision on motions on the grounds that the evidence on which we relied does not establish the equivalence of "carbon black" with fullerenes (SB 61). Additionally, the senior party urges without explaining the factual basis for their position that, even assuming the junior parties' claims to inks or toners comprising fullerenes were prior art, there was no basis for our conclusion that the junior parties' claims would have anticipated or at least rendered obvious the claims to fullerenes, *per se* (SB 62).

As we found in our decision on motions and, indeed, as the parties were informed in Paper Number 12 (see page 5 of Paper Number 12), the fact that the parties agree that there is no interference-in-fact is neither controlling nor binding on the PTO. See Hsing v. Myers, 2 USPQ2d 1861, 1863 (BPAI 1987) (PTO not bound by parties'

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stipulation that no interference-in-fact exists) (citing Jones v. Stuart, 192 USPQ 475 (Comm'r Pats. 1975)). Rather, whether or not an interference-in-fact exists is a question of fact and requires a comparison of the parties' claims to determine if any of the parties' claims are directed to the "same patentable invention" in the sense of 37 C.F.R. § 1.601(n). The junior parties' continued argument concerning the allegedly improper count in this interference is irrelevant to the question of whether or not an interference-in-fact exists. As noted on page 7 of Paper Number 12:

The focus of a preliminary motion under § 1.633(b) is not on the count, but on the respective claims of the parties. Thus, a preliminary motion under § 1.633(b) is not logically inconsistent with the alternative format of the count.

Neither party has explained in their respective briefs the basis for their argument, *vis-à-vis* 37 C.F.R. § 1.601(n), that no claim of either party is directed to the "same patentable invention".

Similarly, the parties' argument that there is no interference-in-fact because no party has a claim identical to a claim of their opponent evidences a misunderstanding of the applicable law. As noted on page 9 of Paper Number 12:

the declaration of an interference is not dependent on a "conclusion of identic invention." Under the regulations, an interference may be declared when the parties have claims drawn to the "same patentable invention." 37 CFR § 1.601(i). See also Aelony v. Arni, 547 F.2d at 570, 192 USPQ at 490.

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While the senior party again agrees with the junior parties that "there is no interference-in-fact" (SB 59), as observed on page 9 of Paper Number 12 this position is inconsistent with the senior party's concession that "the pigment and toner compositions including fullerenes are obvious in view of the fullerene product." It is equally inconsistent with the senior party's position that the proper procedure would have been to issue the senior party's application and then have the Commissioner order a reexamination (37 C.F.R. § 1.520) of the junior parties' patents using the senior party's issued patent as "prior art" (SB 58).

The junior parties' argument that the senior party has no claims to toners or inks comprising fullerenes ignores all that we have stated above with respect to the proper analysis for determining whether or not an interference-in-fact exists. We repeat that it is not necessary for parties to have identical claims in order to support a conclusion that an interference-in-fact exists. Rather, it is only necessary that the parties have in their respective patents and application a single allowable claim directed to the "same patentable invention" as defined in 37 C.F.R § 1.601(n). See Conservolite Inc at 21 F.3d 1101, 30 USPQ2d at 1628, wherein the court noted: "The current rules do not require "copying" claims."

In our decision on motions we set forth our reasoning and analysis for concluding that there is an interference-in-fact between the parties. The junior parties' briefs completely ignore that

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reasoning and analysis. Thus, we are not persuaded of any reason for changing our decision below, which decision we adopt and to which opinion we herein adhere.

We recognize that Huffman et al.'s claims 45 through 77, 79 through 84, 86 through 89, 91 through 93 and 96 through 180 have been indicated by the examiner in the Interference - Initial Memorandum as corresponding to the count and not allowable. Nevertheless, claims 85, 90, 94 and 95 are designated as corresponding to the count and allowable. As we stated above, it is only necessary that the parties have in their respective patents and application at least one claim which is allowable and directed to the "same patentable invention" in order to support a finding that there is an interference-in-fact and to declare an interference. After the termination of this proceeding by the issuance of a judgment and upon return to the examining group of the senior party's involved application, prosecution will be re-opened and the issues which formed the basis for the examiner's determination that the senior party's claims were unpatentable must be resolved before the examiner. Suffice it to say, the junior parties failed to move for judgment against the senior party under 37 C.F.R. § 1.633 on any grounds let alone the grounds which form the basis of the rejections made by the examiner below.

The senior party contends that we failed to set forth our rationale for concluding that, assuming the junior parties' ink or toner compositions were "prior art" with respect to the senior party's claims corresponding to the count, the junior parties' toner

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compositions comprising C_{60} or C_{70} and the junior parties' ink composition comprising a liquid vehicle and a fullerene would have anticipated (35 USC 102) or would have at least rendered obvious to a person of ordinary skill in the art (35 USC 103) the subject matter encompassed by the senior party's claims corresponding to the count (SB 62). The senior party's contention lacks any reference to any facts in the record which supports their contention. Indeed, the record contains evidence to the contrary.

It was our position and remains our position that a claim directed to " C_{60} " is anticipated by a claim to "a toner comprising C_{60} ", assuming the toner claim is prior art with respect to the claim to C_{60} because the toner claim "describes", in the sense of 35 U.S.C. § 102, the claim to C_{60} . Because anticipation has been held to be the "epitome" of obviousness, the toner claim also would have at least rendered obvious the claim to C_{60} . We also disagree with Huffman et al.'s argument at page 61 of their brief that "there is nothing in the record which permits the Board to equate "carbon black" with fullerenes." In the first instance, our finding that the toner claims comprising C_{60} anticipated the claims to C_{60} was adequate to support our conclusion that there was an interference-in-fact. Further, Huffman et al. mischaracterize what we held in our decision on motions. Specifically, taken in context, after the *Kirk-Othmer Encyclopedia of Chemical Technology* to support our conclusions, we said at pages 4 through 6 of Paper Number 38:

the junior parties' toner and ink compositions would have been *prima facie* obvious to a person of ordinary skill in the art in light of age-old knowledge that carbon blacks are useful pigments or colorants for inks and toners. the principal black pigments are described as "those which consist of elemental carbon in a more or less pure form" and include carbon blacks and lampblacks. Thus, we consider that a person possessing ordinary skill in the art would have expected fullerenes, an allotrope of elemental carbon derived from soot, in more or less pure form, to be useful colorants or pigments for inks or toners.

Still further, Huffman et al.'s process produces what is described by them as "a sooty carbon product which is graphitic carbon including a few percent of C_{60} and low levels of C_{70} which are recoverable." (see page 2, lines 22 through 24 of Huffman et al.'s specification). Thus, to the extent Huffman et al.'s claims embrace the product produced by their process, it includes graphitic soot (a carbon black) which includes "a few percent of C_{60} ". Carbon blacks are notoriously well-known pigments for toners and C_{60} has been found in commercial carbon blacks. See the article by Shigamatsu attached to Paper Number 56, for example.

THE DESIGNATION OF THE JUNIOR PARTIES' CLAIMS

The junior parties, having had their motion filed pursuant to 37 C.F.R. § 1.633(c)(4) to redefine the interference to change the designation of certain of their claims originally designated as corresponding to the count to claims not corresponding to the count denied (see Paper Number 38), maintain in their main brief that

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various claims of their U.S. Patent Numbers 5,188,918, 5,114,477 and 5,232,810 are separately patentable from the subject matter of the count and should, therefore, have been designated as not corresponding to the count. The senior party urges us to reject the junior parties' various positions on this issue because the senior party believes the junior parties' evidence, such as it is, is inadequate to meet the junior parties' burden of proof. Additionally, the senior party urges us to reject the junior parties' arguments that: (1) a method of using a material is, *per se*, separately patentable from the material itself; (2) the examiners who issued the junior parties' patents found the junior parties' claims to be separately patentable from the fullerenes, *per se*; (3) the senior party application does not support the junior parties' claims designated as corresponding to the count.

In our decision on motions, we denied the junior parties' motion because the junior parties had not met their burden of persuasion and overcome the rebuttable presumption that claims originally designated as corresponding to the count are directed to the "same patentable invention" in the sense of 37 CFR 1.601(n) (page 12 of Paper Number 38). We found that the junior parties had failed to establish the separate patentability of their claims by making a claim-by-claim comparison of each of their claims designated as corresponding to the count with each of the other parties' claims designated as corresponding to the count whose designation was not

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disputed (*Id.*). Stated in terms of the requirements of 37 C.F.R. § 1.637(c)(4), the junior parties' motion failed to "[s]how that the claim does not define the same patentable invention as any other claim whose designation in the notice declaring the interference as corresponding to the count the party does not dispute."⁷ We also agreed with the senior party that none of the evidence submitted by the junior parties with their motion addressed the issue of whether or not the claims sought to be "undesignated" were separately patentable from all the other claims designated as corresponding to the count (*Id.*).

Rather than address our reasons for denying the motion below, the junior parties re-present the same arguments and rely on the same evidence which we found to be lacking below. We have carefully reconsidered our decision as set forth in Paper Number 38 but, except for our *sua sponte* determination with respect to Ziolo I's claims 1 through 6 set forth below, we remain unpersuaded by any of the arguments made by the junior parties in their brief that we erred in reaching our decision.

Nevertheless, in spite of our conclusion that the junior parties have not met their burden of persuasion concerning the denial of their motion, we have reconsidered our conclusion to the extent we held that Ziolo I's claims 1 through 6 directed to toners where the fullerene is used as a charge stabilizing agent are directed to the

⁷ 37 C.F.R. § 1.637. 1995.

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"same patentable invention" as the claims of any other party designated as corresponding to Count 1. Accordingly, pursuant to our express authority under 37 C.F.R. § 1.655(c), we shall, *sua sponte*, grant-in-part the junior parties' motion (Paper Number 20) to the extent the relief sought is a finding that claims 1 through 6 of Ziolo I (U.S. Patent Number 5,232,810) do not correspond to Count 1.

The claims of Ziolo I are directed to toner compositions comprising resin particles, pigment particles and a charge enhancing additive "comprised of a fullerene or fullerenes wherein the fullerene or fullerenes are comprised of C₆₀ carbon, C₇₀ carbon, C₈₄ carbon, C₂₃₄ carbon, C₃₄₀ carbon, or mixtures thereof." While Ziolo I also contemplates the use of fullerenes as pigments for the claimed toner compositions (see column 6, lines 25 through 36) and while we adhere to our position as expressed above concerning why the use of fullerenes as a pigment would have been obvious in the sense of 35 U.S.C. §103, there is no evidence in this record which establishes that fullerenes, *per se*, were known as charge enhancing additives in toner compositions. There is also no evidence in this record which establishes why fullerenes would have been expected to have properties which would have made them useful as charge enhancing agents in toners. We know of no independent reason why it would have been expected that fullerenes, a third allotrope of carbon, would have been expected from its properties to have been a useful charge enhancing agent. Therefore, assuming the claims of the parties

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designated as corresponding to the count were prior art with respect to claims 1 through 6 of Ziolo I, none of those claims would have anticipated or rendered obvious Ziolo I's claims 1 through 6.

Accordingly, this interference will be redeclared in a separate paper filed on even date with this decision to reflect that claims 1 through 6 of Ziolo I do not correspond to Count 1.

THE PATENTABILITY OF THE SENIOR PARTY'S CLAIMS

We first raised the issue of whether or not the senior party's claims designated as corresponding to Count 1 are patentable in our decision on motions. Therein, we *sua sponte* found that:

the article by Buseck et al. in Volume 257 of the July 1992 Science magazine and the Hecht article in the March 1994 New Scientist magazine to be evidence that fullerenes, in the form of C₆₀ and C₇₀, are naturally occurring forms of carbon found in nature in the strata of certain Precambrian rocks (shungite) and Cretaceous period clays, albeit in infinitesimal amounts. In our view, Huffman et al.'s claims corresponding to the count do not exclude or distinguish from the naturally occurring fullerenes. Specifically, there is no evidence in the record which establishes that Huffman et al.'s C₆₀ and C₇₀ differs in form, quality or properties from naturally occurring C₆₀ and C₇₀.

We subsequently afforded the parties an opportunity to respond to our *sua sponte* finding. After considering the parties' responses to the *sua sponte* holding we adhered to our conclusion that the senior party's claims designated as corresponding to Count 1 were unpatentable under 35 U.S.C. § 101 on the grounds that:

C₆₀ and C₇₀ are naturally occurring substances and Huffman et al.'s claims either read on the naturally occurring fullerenes or do not exclude the naturally occurring fullerenes.

An order to show cause was issued against the senior party and we also cited therein additional references which established the existence of fullerenes on earth in geological strata (see Paper Number 56). The senior party responded, *inter alia*, by requesting a final hearing to review our decision.

The basis for our *sua sponte* finding was the evidence in the nature of the various publications we cited which established that C₆₀ and C₇₀ were found, naturally, in the earth's crust in various geological strata in various locations around the earth. As we stated in the order to show cause of September 5, 1996:

our holding was founded on the dual footing that C₆₀ and C₇₀ are naturally occurring substances and Huffman et al.'s claims either read on the naturally occurring fullerenes or do not exclude the naturally occurring fullerenes. There is no persuasive objective evidence in the record which establishes that Huffman et al.'s claimed C₆₀ and C₇₀ differ from the naturally occurring fullerenes "in form, quality or substance". In short, our *sua sponte* holding was and is based on the fact that Huffman et al.'s claims corresponding to the count encompass naturally occurring fullerenes and that naturally occurring fullerenes are not "new" in the sense used in 35 USC 101.

Based on the aforementioned articles and the award for the 1996 Noble Prize in chemistry to Smalley, Curl and Kroto, three of the five authors of the 1985 Nature article on which we relied as part of the

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evidence that fullerenes existed in natural form in nature, we further informed the parties that we could not, assuming the senior party prevailed in this proceeding, award judgment to the senior party with respect to certain claims which represented or included the discovery of Smalley et al.

The junior party urges us to sustain our determination that the senior party's claims designated as corresponding to Count 1 are unpatentable. The junior party urges that the senior party's claims are unpatentable under 35 U.S.C. § 101, for reasons raised by us in our various decisions below; and are unpatentable under 35 U.S.C. §§ 102, 103 and 112, for reasons raised by the examiner during *ex parte* prosecution of the Huffman et al. application involved in this interference; and, for various reasons raised before the European Patent Office. Contrariwise, the senior party urges that we should reverse our decisions below and find the senior party's claims patentable because they are not the same as the products of nature alleged by us to have been established in the various articles on which we relied. Moreover, the senior party now directs us to specific limitations in specific claims or groups of claims which allegedly distinguish from and exclude the fullerenes found in the earth's crust (SB 17 through 21).

In light of the junior parties' arguments, we believe it necessary to state here what did not form the basis of our *sua sponte*

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finding. We stated in the order to show cause of September 5, 1996, our holding was:

based on the fact that Huffman et al.'s claims corresponding to the count encompass naturally occurring fullerenes and that naturally occurring fullerenes are not "new" in the sense used in 35 USC 101.

We were not then and are not now suggesting that any claim of Huffman et al. corresponding to Count 1 is unpatentable based on any "prior art" as defined in 35 U.S.C. § 102, under either 35 U.S.C. §§ 102 or 103. Rather, in Paper Number 56 at page 17 in response to Huffman et al.'s argument that the articles on which we relied were not "prior art" because their publication date was subsequent to Huffman et al.'s effective filing date, we stated:

we did not rely on these articles as "prior art" as defined in 35 USC 102 under either 35 USC 102 or 35 USC 103 but instead relied on these articles as evidence of the fact that fullerenes occurred naturally in deposits in the earth's crust prior to Huffman et al.'s filing date and, as such, were ineligible for patent protection under 35 USC 101 based on the Supreme Court's decision in Diamond v. Chakrabarty, 447 U.S. 303, 100 S.Ct. 2204, 206 USPQ 193 (1980). Reliance on such references to show a state of fact has been upheld by the predecessor to our reviewing court. In re Langer, 503 F.2d 1380, 1391, 183 USPQ 288, 297 (CCPA 1974); In re Wilson, 311 F.2d 266, 268, 135 USPQ 442, 444 (CCPA 1962).

We remain convinced that the articles on which we relied prove by a preponderance of the evidence that C₆₀ and C₇₀ are found in various geological strata in different locations around the earth.

Additionally, we cited other articles in the Order to Show Cause

which further substantiated that fullerenes are old compounds found in geological strata in Canada and Russia and also found in various types of carbon blacks. Because all the articles on which we relied speak in terms of the empirical formulae C_{60} and C_{70} in referring to fullerenes and because we presume that the empirical formulae must describe the particular geometry now understood to represent the soccerball-like structure of fullerenes, we reject Huffman et al.'s mere argument that fullerenes are not found in the earth's crust. Stated another way, Huffman et al. have failed to establish that the formulae C_{60} and C_{70} by which the various articles refer to fullerenes may represent some compound other than the fullerenes which Huffman et al. claim. Accordingly, we reject Huffman et al.'s mere hypothesis that naturally occurring fullerenes are not found in nature in a "3 dimensional array". Indeed, the first sentence from the article which is Exhibit 7 to the Kroto declaration states:

Naturally occurring fullerenes have been found in rock samples that were subject to singular geologic events such as lightening strikes (1), wildfires at the K-T boundary (2) and meteoritic impacts (3). [emphasis added].

Additionally, at page 127 of the Kroto article which is Exhibit 3 to the Kroto declaration, the author, Harold W. Kroto, concludes that:

Now we have discovered that an unexpected molecule, C_{60} , has been under our noses on earth since time immemorial and was invisible until now. [emphasis added].

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Accordingly, we do not consider the issue of whether or not C_{60} and C_{70} occur naturally or are found in deposits in the earth's crust to be open to serious question.

We also reject as lacking factual basis in the record Huffman et al.'s mere theory that the naturally occurring fullerenes exist as "molecules interspersed in the rocks in which they are alleged to be present" (SB 15). We also reject Huffman et al.'s mere argument that naturally occurring fullerenes are found in an impure state and are not crystalline. While the articles on which we have relied is silent on these properties, there is simply no evidence which supports any of Huffman et al.'s theories or argument. Rather, the narrow issue for us to decide is whether or not any of Huffman et al.'s claims designated as corresponding to Count 1 distinguish from the fullerenes (C_{60} and C_{70}) found in nature.

Huffman et al. do not concede the articles on which we relied prove the existence of fullerenes in the earth's crust. Nonetheless, Huffman et al. urge that their claims corresponding to the count may be considered in various groups as defined by particular claim language which language distinguishes them from C_{60} and C_{70} described in the articles on which we relied.

Specifically, Huffman et al. urge that claims 86, 96 through 108, 111 through 152 and 154 through 180 all require the fullerenes be present in "macroscopic amounts" which excludes the trace amounts of fullerenes as found in nature. It is argued that claims 84, 85, 89, 90, 94, 95, 102, 103 and 135 through 140 recite

that the fullerenes are "substantially pure" which is said to exclude the impure fullerenes found in nature. Huffman et al. also urge that claims 45 through 51, 73 through 75, 77, 80, 83, 85, 88, 90, 92 through 95, 111, 112 and 165 through 180 require either "solid" C_{60} or "solid" C_{70} which means the fullerenes can be seen unlike naturally occurring fullerenes which exist only in parts per billion (ppb) in nature in a one dimensional array. Claims 45 through 57 are said to distinguish from naturally occurring fullerenes by the use of the claim language "a solid consisting essentially of C_{60} , C_{70} or mixtures thereof." Under well-understood interpretation of the phrase "consisting essentially of", Huffman et al. urge that such claims exclude other materials found with the deposits of naturally occurring fullerenes. Claims 48 through 51, 73 through 75, 77, 92 through 95, 165 and 166 are said to distinguish from the naturally occurring fullerenes by reciting that the claimed fullerenes are "crystalline." Huffman et al. urge that their claims directed to a product-by-process (claims 119 through 132) distinguish from naturally occurring fullerenes because they are man made and because the products contain "macroscopic" amounts of fullerenes rather than mere trace amounts. Finally, it is argued that claim 86 recites a color for the product which "implies that the product is in macroscopic amounts" which distinguishes them from naturally occurring fullerenes.

We shall address the arguments by Huffman et al. by first analyzing the evidence on which we relied to reject Huffman et al.'s

claims and then interpreting the claims in their application, giving them their broadest, reasonable interpretation, consistent with the disclosure in Huffman et al.'s specification.

In our *sua sponte* holding we relied on the article by Buseck et al. in Volume 257 of the July 1992 Science magazine and the Hecht article in the March 1994 New Scientist magazine as evidence that fullerenes, in the form of C_{60} and C_{70} , are naturally occurring forms of carbon found in nature in the strata of certain Precambrian rocks (shungite) (Buseck et al.) and Cretaceous period clays (Hecht), albeit in infinitesimal amounts. In our order to show cause (Paper Number 56), we also cited six additional articles related to fullerenes. Four of the cited six additional references (Daly et al., Becker et al., Becker et al. and Buseck et al.) are directed to the presence of fullerenes in geological deposits found on earth. We find the two Becker et al. articles to be particularly relevant because they establish that fullerenes have been found in a rock formation known as the Sudbury impact structure in Ontario Canada which is 1.85 billion years old and are present in amounts of from 1 to 10 parts per million.

From all the above, we find it beyond argument that C_{60} and C_{70} are found in the earth's crust. Because there is absolutely no evidence in this record that C_{60} or C_{70} as referenced in the articles could represent any form of carbon other than the unique cage structure recognized for fullerenes, we find that fullerenes, or

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bucky balls, are a form of carbon found naturally in the earth's crust.

"MACROSCOPIC AMOUNTS"

As our reviewing court noted in Markman v. Westview Instruments Inc., 52 F.3d 967, 980, 34 USPQ2d 1321, 1330 (Fed. Cir. 1995) (*en banc*), *aff'd.*, 517 U.S. 370, 38 USPQ2d 1461 (1996):

As we have often stated, a patentee is free to be his own lexicographer. Autogiro, 384 F.2d at 397, 155 USPQ at 702. The caveat is that any special definition given to a word must be clearly defined in the specification. Intellicall, Inc. v. Phonometrics, Inc., 952 F.2d 1384, 1388, 21 USPQ2d 1383, 1386 (Fed. Cir. 1992). The written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of claims.

Accordingly, we begin our analysis of what the term "macroscopic" means by finding a definition of the term "macroscopic", *per se*, from several dictionaries for the purpose of establishing the plain and ordinary meaning of the word "macroscopic". The first definition of "macroscopic" in "Webster's Third New International Dictionary of the English Language" is:

large enough to be observed by the naked eye
-- opposed to *microscopic*

"Hackh's Chemical Dictionary, Fourth Edition" defines macroscopic as:

[d]escribing objects visible to the naked eye. *Cf. microscopic.*

Thus, the ordinary meaning of "macroscopic amount", in literal terms, is an amount visible to the naked eye, that is, visible without the

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aid of a microscope. Unless Huffman et al. intended otherwise, we must give the term "macroscopic" its ordinary meaning.

Neither the involved Huffman et al. application nor its parent application, of which the involved application is a continuation-in-part and for which Huffman et al. were granted benefit, use the phrase "macroscopic" in *ipsimis verbis*. However, lack of *ipsimis verbis* support is not fatal to Huffman et al.'s use of the term in their claims.

No original claim in either the Huffman et al. benefit application or the involved application uses the term "macroscopic amounts". Rather, Huffman et al. amended claim 86 in the involved application in Paper Number 16 to change "measurable amount" to --- macroscopic amount---, and added new claims 96 through 185, some of which new claims included the phrase "macroscopic amounts". Huffman et al. argued in their amendment that the new terminology found support in their original disclosure and urged that their claims as amended and the newly added claims were patentable (see Paper Number 16 beginning in the paragraph bridging pages 10 and 11 and concluding on page 12 in the third full paragraph).

At page 1, lines 25 through 30 of their specification, Huffman et al., in discussing the prior art, state that:

Yet, to date, no one has been successful in verifying the existence of this molecule since no one has been successful in isolating the molecule in measurable amounts. Thus, no process for producing

recoverable amounts of this new compound have been described. (emphasis added).

In the first instance, we do not consider, and Huffman et al. have not established on this record, either that "no one has been successful in isolating the molecule in measurable amounts" or that "no process for producing recoverable amounts of this new compound have been described." We find no nexus between the term "macroscopic amount" and "measurable amounts" or "recoverable amounts". Certainly, a microscopic amount of a product is capable either of being recovered or measured by any number of well-known techniques.

Huffman et al.'s specification, at page 2, lines 17 and 18, describes their process as enabling the "production of recoverable amounts of C_{60} and C_{70} ." At lines 22 through 24 of page 2, Huffman et al. describe the product prepared by their process as:

a sooty carbon product which is graphitic carbon including a few percent of C_{60} and low levels of C_{70} which are recoverable from the product.

We find this disclosure to mean that from an unidentified amount of "graphitic carbon" produced by their process, Huffman et al. obtain a small amount of, but more than 1 (one) percent of, C_{60} and even less C_{70} , based on the amount of "graphitic carbon" obtained. Whether or not such amounts of C_{60} and C_{70} are "macroscopic" cannot be determined from this disclosure alone.

On page 3 of the specification, 4 (four) figures of drawing are described. Figure 1 is said to be "a micrograph of typical crystals of the 98% C_{60} , 2% C_{70} material showing thin platelets, rods

and stars of hexagonal symmetry." The reference to "typical crystals of the 98% C₆₀, 2% C₇₀ material" is not further explained or described and we cannot ascertain to what specific material Huffman et al. is referring. Figure 2 is described as an "X-ray diffraction of a microcrystalline powder of the 98% C₆₀, 2% C₇₀ solid material." Again, what specific material is being referenced cannot be determined. Figure 3 is described as an infrared (IR) absorption spectrum of a 2 (two) micrometer thick coating of the fullerene mixture described in the previous figures on a silicon substrate. Figure 4 is a visible-ultraviolet absorption spectrum of a 0.1 micrometer coating of the aforementioned fullerene mixture on quartz.

On page 7, lines 2 through 10 of their specification, Huffman et al. describe how they obtain fullerenes by vaporizing graphite. Specifically, they state therein that:

[t]he electrical heating vaporizes the constricted tip of the graphite rod producing a high density vapor of carbon, which quickly condenses into smoke consisting of very fine particles (of the order of 0.1 microns) of graphitic carbon with an admixture of a few percent of the desired C₆₀ molecule. [emphasis added]

We take official notice that the human eye cannot detect a particle 0.1 micron in size without the aid of a microscope. Thereafter, on page 8 of the specification, Huffman et al. reference Figure 1 in discussing their "[s]tudies by optical microscopy of the C₆₀ material which is left after evaporating the benzene solution". We believe it is plain from this disclosure that the product of Figure 1 requires a

microscope to be seen and is not "macroscopic" because the product cannot be seen with the naked eye. The further discussion on page 8 of the X-ray diffraction studies conducted by Huffman et al. on the product obtained by them using their process with its reference to individual crystals does nothing to clarify the meaning of "macroscopic" as used by Huffman et al. Indeed, in Huffman et al. Exhibit 3 (the videotape), the observation of the evaporation of solvent with subsequent formation of crystals is observed with a microscope! Thus, it would appear that individual crystals are not visible to the naked eye and, therefore, are not "macroscopic" in the ordinary sense.

On page 11 of their specification, Huffman et al. discuss films or coatings of C_{60} as comprising "sub-micron microcrystalline particles of solid C_{60} ". Beginning in the paragraph bridging pages 11 and 12 and continuing on page 12, Huffman et al. discuss the IR spectrum of "an approximately 2 micrometer thick coating of C_{60} coating on a silicon substrate." Suffice it to say that "sub-micron" particles and coatings several microns thick would not necessarily be expected to be visible to the naked eye. Thus, the microcrystalline particles of solid C_{60} and the 2 micrometer coating of the same cannot be said to be "macroscopic" in the ordinary sense of the term.

Example 1 on page 16 of the specification describes a " C_{60} -containing carbon dust" prepared by Huffman et al.'s process by evaporating graphite rods in a helium atmosphere of up to 400 torr. The product, carbon dust containing unidentified amounts of C_{60} , was

scraped from unidentified "substrates" and the internal surfaces of the reaction chamber. That product was worked-up by washing the dust with ether and subsequently extracting the previously ether-washed dust with benzene. Evaporation of the benzene solution yielded C_{60} as a "microcrystalline residue." It appears from Example 1 that the product obtained, a C_{60} -containing carbon dust, was visible to the naked eye because it could be scraped off the "substrates" and surfaces of the reaction chamber notwithstanding its description, after work-up, as a "microcrystalline residue". Thus, the "graphitic soot" obtained which contained an unidentified amount of C_{60} and even less C_{70} was visible.

In Example 2, the process of Example 1 is repeated but in helium at "2 or more atmospheres" (page 17 of the specification). The product obtained in Example 2 is said to contain "a greater percentage of C_{70} than does the product in Example 1." We find little or no description in this example which aids us in the resolution of what Huffman et al. mean by the claim language "macroscopic". Huffman et al. do suggest at page 2, lines 25 through 27 of their specification that increasing the pressure of inert gas (helium) increases "the fraction of C_{70} molecules" (emphasis added). Huffman et al. further disclose that while at higher pressures the ratio of $C_{70}:C_{60}$ increases, the overall yield decreases (see page 4, line 16 through page 5, line 7 of the specification). Accordingly, for the reasons we expressed above with respect to Example 1, we find Example 2 to be of little assistance to us in understanding the

meaning we should give to the term "macroscopic" in Huffman et al.'s claims designated as corresponding to Count 1.

Example 3 on page 18 is described as a method for obtaining "[p]ure C₆₀ and C₇₀". The method comprises dissolving the mixtures obtained from either Example 1 or 2 in benzene. The C₆₀- and C₇₀-containing benzene mixture is added to an alumina column for elution using benzene as the eluent. The fractions obtained are evaporated to dryness. Huffman et al. state that the presence of product in the fractions "can be determined by taking mass spectroscopy thereof." Because there is no yield data for the product obtained in either fraction, we find Example 3 does not shed much light on the meaning of "macroscopic" as utilized in Huffman et al.'s claims corresponding to Count 1.

From all the above, we find the term "macroscopic" is not, *per se*, defined anywhere in Huffman et al.'s disclosure in quantitative terms. However, because Huffman et al.'s disclosure as discussed above is not entirely inconsistent with the ordinary meaning of the term "macroscopic", we shall give said term its ordinary, well-accepted meaning of visible without the aid of a microscope or, simply, visible with the naked human eye.

In reaching this conclusion we have carefully considered the declaration of Kroto and the other evidence in this record. We find Kroto to be a recognized expert in this field. Indeed, he is one of the Nobel laureates credited with the discovery of fullerenes

by the Swedish National Academy in 1996. Kroto, like other researchers in this field as evidenced by numerous publications in the record, appears to acknowledge Huffman et al.'s contribution in this field to be their process for producing fullerenes in amounts not attainable before their invention. Nothing in Kroto's declaration, however, indicates that he was aware that Huffman et al. are claiming C_{60} , *per se*.

Nevertheless, we also conclude that the naturally occurring fullerenes described in the various references discussed above are not present in the earth's crust in "macroscopic" amounts because it would not be expected that amounts of up to 10 parts per million could be seen with the naked eye. Accordingly, to the extent the term "macroscopic amount" may be given its ordinary meaning, the claims using said term distinguish from the fullerenes found in the earth's crust which are not visible to the naked eye.

"SUBSTANTIALLY PURE"

Huffman et al.'s process, which process is no longer claimed by them in their involved application, does not produce "pure" C_{60} and/or C_{70} as argued by Huffman et al. Rather, their process produces an unquantified amount of carbonaceous soot from which small, further undefined amounts of "pure" C_{60} and/or C_{70} can be recovered and subsequently purified.

At page 2, lines 18 and 19 of their specification, Huffman et al. state that:

A process has now been developed for the production of recoverable amounts of C_{60} and C_{70} .

At lines 22 through 24 of the same page, Huffman et al. continue by noting that:

This process produces a sooty carbon product which is graphitic carbon including a few percent of C_{60} and low levels of C_{70} .

The process is described as pressure dependent. At page 4, lines 16 through 18, it is disclosed that:

The amount of C_{60} and C_{70} produced from this carbon source is dependent upon the pressure of the quenching gas.

On page 7, lines 2 through 10 of their specification, Huffman et al. describe how they obtain fullerenes by vaporizing graphite.

Specifically, they state therein that:

[t]he electrical heating vaporizes the constricted tip of the graphite rod producing a high density vapor of carbon, which quickly condenses into a smoke consisting of very fine particles (of the order of 0.1 microns) of graphitic carbon with an admixture of a few percent of the desired C_{60} molecule. [emphasis added]

Additionally, at page 13, lines 26 through 31, Huffman et al. disclose that:

Thus, using the procedures described hereinabove, at quenching pressures of less than 1 atmospheric pressure and especially at pressures of 50-400 torr, a product is produced which is predominantly C_{60} and contains minor amounts of C_{70} .

Recovery of the desired products from the sooty carbon product (graphitic carbon) is described at page 5, lines 18 through 26 of the specification wherein Huffman et al. teach that:

The C_{60} and C_{70} molecules can be removed from this collected quenched product by contacting said quenched product with an extracting solvent. In other words, the black soot is placed in a container containing the extracting solvent, or the extracting solvent is poured onto the black soot placed in a container. In either case, the C_{60} and C_{70} molecules become dissolved in the solvent, while the remainder of the black soot remains insoluble.

Purification of the products so-recovered is described at pages 13 and 14 of the specification as being obtained by "conventional techniques known to one skilled in the art." Identification of the products prepared by the disclosed process is described at page 14, lines 26 through 29. Therein it is stated that:

The fractions with product will contain microcrystals, the identity of which can be confirmed by spectroscopy, e.g., mass spectroscopy.

From all the above, we find the product of Huffman et al.'s process is graphitic carbon which contains a small but unquantified amount of C_{60} and even less C_{70} .

Nevertheless, we find that the various references on which we have relied to establish that C_{60} and C_{70} or fullerenes or bucky balls are found, naturally in the earth's crust, only establish that C_{60} and C_{70} are found in the earth's crust in large ore deposits and in amounts up to 10 parts per million (0.001 per cent). Based on the

articles on which we relied, we have not concluded that it would have been obvious to mine the fullerenes, separate them from the ore in which they are found and purify them. That would constitute a "prior art" rejection and, as we have stated, the statutory basis for our *sua sponte* was 35 U.S.C. § 101, on the grounds that C₆₀ is not "new". Further, whether or not naturally occurring fullerenes, if recovered and purified, have the same properties as those claimed by Huffman et al. is not an issue before us. That is an issue for another forum. We simply note here that no reference on which we have relied to establish the prior existence of C₆₀ and C₇₀ in the earth's crust describes C₆₀ and C₇₀ to be present in graphitic soot. We also find that the evidence on which we relied to establish that fullerenes occur naturally in the earth's crust does not establish in what state of purity they are found. Accordingly, claims to "substantially pure" fullerenes are not barred under 35 U.S.C. § 101 by any of the articles on which we relied.

"SOLID CONSISTING ESSENTIALLY OF C₆₀"

Huffman et al. argue that the claims which recite that the fullerenes are a "solid" or a "solid consisting essentially of C₆₀ or C₇₀" distinguish from the fullerenes found naturally in the earth's crust. Huffman et al. urge that the descriptive term "solid" means that "the product can be seen, consistent with usage in the art" (SB 18, footnote omitted). Moreover, Huffman et al. urge that because the articles on which we have relied only describe the fullerenes a

present in parts per billion that "presumptively only molecules are present." (SB 19). Huffman et al. additionally argue that when the term "solid" is further coupled with the language "consisting essentially of" the claims using said language even further distinguish from naturally occurring fullerenes because the geological formation containing the fullerenes "contains mostly other components and materials" (page 19 of their brief).

We find little merit in Huffman et al.'s mere argument that the term "solid" distinguishes Huffman et al.'s claims from naturally occurring fullerenes. In the first instance, Huffman et al. have supplied absolutely no evidence to support their implied argument that naturally occurring fullerenes are not solid or lack definite shape and volume. Neither have Huffman et al. furnished any evidence which substantiates that naturally occurring fullerenes, because they cannot be seen with the naked eye, are not solids. We take the articles on which we relied on their face as establishing that carbon, in the form of C_{60} and C_{70} , has been found in the earth's crust and that such deposits are ancient. Indeed, this very disclosure formed the basis for our conclusion that C_{60} and C_{70} were not "new" in the sense of 35 U.S.C. § 101.

Huffman et al. have provided no meaningful scientific basis or any evidence for concluding that the C_{60} identified in the articles exists in a different state of matter than the C_{60} which they prepared by vaporizing a graphite rod. Indeed, as we have stated above, we find that the empirical formula C_{60} necessarily

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defines the unique soccerball-like structure that Smalley et al. determined to exist in their seminal paper on this matter.

The phrase "consisting essentially of" is judicially recognized as rendering the claim open for the inclusion of unspecified ingredients which do not materially affect the basic and novel characteristics of the composition. In re Herz, 537 F.2d 549, 551 [1,2], 190 USPQ 461, 463 [1] (CCPA 1976); In re Janakirama-Rao, 317 F.2d 951, 137 USPQ 893 (CCPA 1968).

In Janakirama-Rao at 317 F.2d 954, 137 USPQ 896, the court specifically noted that:

[t]he word "essentially" opens the claims to the inclusion of ingredients which would not materially affect the basic and novel characteristics of appellant's compositions as defined in the balance of the claim, according to the applicable law. [emphasis on "balance" added].

Further, in discussing Herz's specification with respect to Herz's composition's novel antioxidant properties vis-à-vis the prior art (Messina), the court in Herz at 537 F.2d 552 [4], 190 USPQ 463, concluded that:

Appellants' specification states that the composition can contain any of the well-known additives, including dispersants. There is no evidence that Messina's dispersant would materially affect the basic and novel characteristic of their composition, and all evidence is to the contrary. Messina's composition has the same basic and novel characteristic - increased oxidation resistance - although it has additional enhanced detergent-dispersant qualities. (underlining added).

Thus, we must look to Huffman et al.'s disclosure to first determine what is the nature of the product obtained by their process for the purpose of interpreting the meaning of "consisting essentially of" in Huffman et al.'s claims.

As we stated above, the Huffman et al. process prepares a mixture described by them as "a sooty carbon product which is graphitic carbon containing a few percent of C_{60} and low levels of C_{70} ." Thus, Huffman et al.'s product obtained by their process but before purification is predominantly graphitic carbon soot which includes "a few per cent" of C_{60} and less C_{70} . Because a product which is predominantly graphitic soot would be expected to have the properties of graphitic soot and not the properties of the "few percent" of fullerenes included in said soot, we find the language "consisting essentially of" excludes the graphitic soot containing fullerenes described by Huffman et al. but not the fullerenes isolated and recovered from said graphitic soot. Accordingly, we interpret the claims using the partially closed claim language "consisting essentially of" as claims to isolated and substantially purified C_{60} . Accordingly, the language "a solid consisting essentially of C_{60} " describes a product which is not shown in any of the references on which we have relied to be found naturally in deposits on the earth.

"CRYSTALLINE"

The Huffman et al. disclosure makes numerous references to: "crystals" of C_{60} and C_{70} ; obtaining product from graphitic soot by

"crystallization"; and, the description of the "crystals" observed by optical microscopy as "what appear to be rods, platelets, and star-like flakes". Nonetheless, the specific claim term "crystalline" is not defined by Huffman et al. Accordingly, we shall give the claim term its ordinary meaning, considered in light of Huffman et al.'s disclosure but without importing limitations from the disclosure into the claims.

Claims 52 and 79 of Huffman et al.'s application designated as corresponding to Count 1 are directed to either "amorphous" or "crystalline" solid which exhibit or have certain physical properties. Because these claims require in the alternative that the claimed materials can be crystalline, we shall consider them here.

Huffman et al. urge that the claims which describe the fullerenes as "crystalline" are patentable because crystallinity is, allegedly, "another characteristic of C_{60} and/or C_{70} not naturally found" (see page 19 of their brief). We are directed to claim 48 among others, which is said to include this limitation. Nevertheless, claim 48 does not recite the term "crystalline" but only recites "A solid consisting essentially of C_{60} ." Thus, Huffman et al.'s arguments are unpersuasive with respect to claim 48.

With respect to the remaining claims said to include this limitation, we are not persuaded by Huffman et al.'s mere arguments that the naturally occurring fullerenes are not necessarily "crystalline". As we stated above, we find that the compound denoted by the empirical formula C_{60} necessarily describes the soccerball-

shaped molecule come to be known as a fullerene. Huffman et al. have provided no evidence that C_{60} denotes any other molecule or that C_{60} exists in any other form. By definition, crystallinity describes a particularly arranged or ordered structure as opposed to a random orientation or no orientation. However, whether the specific shape of the fullerene molecule found naturally in the earth's is crystalline or amorphous is not set forth in any of the articles on which we have relied as evidence that fullerenes are naturally occurring materials. Accordingly, the language "crystalline" used to further describe the subject matter claimed by Huffman et al. distinguishes from naturally occurring C_{60} as described in the articles on which we have relied as a bar under 35 U.S.C. § 101.

"PRODUCT-BY-PROCESS"

Huffman et al. urge that their claims directed to a product-by-process are distinct from and therefore patentable from the naturally occurring fullerenes found in the earth's crust. Huffman et al. emphasize that their fullerenes are synthetically produced, unlike the naturally occurring fullerenes. Huffman et al. stress that the fullerenes obtained from their sooty carbon product do not contain trace amounts of fullerenes but macroscopic amounts which further distinguish from the naturally occurring fullerenes. Finally, Huffman et al. urge that based on the Kroto declaration it is established that their sooty carbon product is different from natural soot found in nature.

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It is well-understood that, even though product-by-process claims are defined by the process in which they are made, determination of their patentability is based on the product itself. In re Thorpe, 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985). As the court stated in Thorpe, 777 F.2d at 697, 227 USPQ at 966:

The patentability of a product does not depend on its method of production. In re Pilkington, 411 F.2d 1345, 1348, 162 USPQ 145, 147 (CCPA 1969). If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. (citations omitted).

Although we are not here presented with patentability in the sense of 35 U.S.C. §§ 102 and 103, to be patentable under 35 U.S.C. § 101, Huffman et al.'s product must be shown to differ in form, quality or properties from naturally occurring C₆₀ and C₇₀.

Huffman et al. urge that their product-by-process claims not only define a particular product in terms of its crystallinity, color and shape, all qualitative properties, but also that Huffman et al.'s product-by-process claims define their product in quantitative terms, that is, that the claims also define "macroscopic" amounts of their particular product. Nevertheless, Huffman et al.'s claims to product-by-process use various terms to define them and are therefore of varying scope.

Claim 53 recites a product produced by a five-step process including the preparation of a sooty carbon product with subsequent recovery of a "solid carbon product comprising C₆₀ molecules." Claims 70 and 71, further modify the subject matter of claim 53 by

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identifying the product of the process as also "further comprising C_{70} " (claim 70) and by reciting a further purification step of the C_{60} molecules to "obtain C_{60} " (claim 71). Claims 108 through 110 recite various limitations to the " C_{60} molecules" obtained by the process of claim 53.

Claim 119 recites a product prepared by a two-step process to obtain a "sooty carbon product comprising C_{60} molecules" in an amount sufficient "to allow macroscopic amounts of C_{60} to be separated from said soot." Claim 141 describes a product prepared by a process including a sublimation step to recover a "carbon product comprising C_{60} ." Claim 155 further provides for the presence of C_{70} in the product prepared by the process of claim 141.

As we have found above, the product of Huffman et al.'s process before work-up and purification is graphitic soot including "a few" percent of C_{60} and even less C_{70} . Because none of the references on which we have relied discloses that fullerenes found in the earth's crust are found naturally in a small fraction of graphitic soot but rather are found in certain ores, it follows that none of the articles describe a product comprising C_{60} recovered from graphitic soot containing small amounts of C_{60} and even less C_{70} . Accordingly, the articles of record on which we relied do not present a bar under 35 U.S.C. § 101 to product-by-process claims 53, 119 or 141.

"COLOR"

It is stated by Huffman et al. that claim 86 distinguishes from naturally occurring fullerenes by reciting "a color for the product." However, only Huffman et al.'s claim 76 recites a color for the product. We shall presume that Huffman et al. intended their argument to apply to claim 76.

The only evidence in this record which establishes any color for the fullerenes claimed by Huffman et al. is the videotape (Huffman et al. Exhibit 3). The videotape shows the crystallization of fullerenes from a colored benzene solution with the formation of reddish brown crystals. The formation of the reddish brown crystals as the solvent evaporates is viewed through a microscope. Thus, it is the microscopic crystals dissolved in the benzene which imparted color to the benzene solution. Thus, Huffman et al.'s fullerenes, an allotrope of carbon, possess a reddish brown color.

We have not overlooked that the junior parties have alleged that claim 76 does not distinguish from certain diamond-containing ores which the junior parties allege are known to be earth-colored. That is, the junior parties assert that certain diamond-containing ores would be reddish brown and, thus, claim 76 reads on such naturally occurring diamond-containing ores. However, conspicuous by its absence in the record is any evidence which supports the junior parties' mere allegations. Accordingly, we reject the junior parties' representations as not founded on objective evidence.

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Moreover, the articles on which we relied are silent as to what color, if any, the naturally occurring C_{60} might have.

Accordingly, from all the above, except for claims 82 and 87, we find all the Huffman et al. claims, which are claims designated as corresponding to Count 1, are not considered to be unpatentable under 35 U.S.C. § 101 because they do not "read on" the fullerenes shown to be found naturally in the earth's crust in ancient deposits because of the various claim limitations discussed above. Thus, Claims 45 through 81, 83 through 86 and 88 through 180⁸, are not unpatentable under 35 U.S.C. § 101.

Huffman et al. have not argued in their brief that either claim 82 or 87 distinguish from the fullerenes described as found naturally in the earth's crust as described in the various articles of record. Neither claim 82 nor claim 87 include any of the above-discussed limitations which we found distinguished from the naturally occurring fullerenes. Accordingly, we find claims 82 and 87, corresponding to Count 1, to be unpatentable under 35 U.S.C. § 101.

PRIORITY

In Paper Number 38, we placed the junior parties under an order to show cause pursuant to 37 C.F.R. § 1.640(d)(3) as the junior parties' preliminary statements failed to overcome the effective filing date of the senior party. In response to the order to show

⁸ Claim 134 is recited to depend from claim 11. There is no claim 11 pending in the Huffman et al. application.

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cause, the junior party requested this final hearing (Paper Number 40).

The junior parties' only arguments on the issue of priority are the arguments raised by them below in various papers. That is, the junior parties allege there should be no priority contest because: there is no interference-in-fact; we lack jurisdiction; and this interference was improperly declared to include claims found to be unpatentable to the senior party by the examiner.

The junior parties argue that this interference should never have declared because the junior parties believe there is no interference-in-fact. We have exhaustively addressed that issue in this proceeding, including our finding above that an interference-in-fact exists between the claims of Ziolo's U.S. Patent Number 5,188,918, the claims of Mort et al.'s U.S. Patent Number 5,114,477 and the claims of Huffman et al.'s U.S. patent application Serial Number 07/580,246. The junior parties also allege that because there is no interference-in-fact, we lack any jurisdiction to initiate or continue these proceedings. This issue has also been exhaustively addressed in this proceeding in the decision on petition (Paper Number 12) and by this Board in this decision. The junior parties also allege that, to the extent this interference was declared to include claims of Huffman et al. indicated by the examiner as not allowable, it is improper. This issue, too, has been exhaustively addressed in this proceeding and above by us in our decision.

None of the junior parties' arguments are found to be persuasive on these issues. Accordingly, this proceeding will not include a priority phase because the junior party has failed to allege a date in their preliminary statements which overcomes the effective filing date of the senior party. However, the senior party raises a priority issue as an argument for patentability of their claims under 35 U.S.C. § 101 based on the allegation that their preliminary statement alleges a conception and reduction to practice of the subject matter of Count 1 in September 1983, which is before the date of Smalley et al.'s Nature publication in 1985.

As we understand Huffman et al.'s argument, because they allegedly conceived and reduced to practice their invention before the date of the Nature article published by Smalley et al., Smalley et al. cannot be considered to have "discovered" fullerenes.

However, a preliminary statement is merely a pleading which sets forth the metes and bounds of a party's priority case, which, if proved, serves as the basis for their argument that they are entitled to an award of priority. In this instance, because there is no priority contest between the parties, the mere allegations in the preliminary statement have never been proved and are nothing more than allegations. More significantly, even if proved, because this proceeding does not include Smalley et al. as a party, Huffman et al.'s allegations, even if proved, would not be determinative of the question of who, as between Smalley et al, and Huffman et al., invented or discovered fullerenes.

As we have decided the priority issue contrary to the junior parties and because the junior parties have not asserted any other persuasive reasons why we should not, on this record, declare Huffman et al. to be the first inventors of the subject matter of Count 1, we find Huffman et al. to be the first inventors of the subject matter of Count 1. Judgment in favor of the senior party and against the junior parties will be rendered forthwith hereinafter.

OTHER ISSUES

PATENTABILITY OF THE JUNIOR PARTIES' CLAIMS

The junior party has spent a significant portion of their briefs arguing that their patent claims are presumptively patentable and that we should not overturn that presumption (JB 35 through 44). However, the patentability of the junior parties' claims has neither been raised by us nor has the senior party moved for judgment against the junior parties on the grounds that any of the junior parties' claims designated as corresponding to Count 1 are unpatentable. Indeed, the patentability of the junior parties' claims is not in issue in this proceeding.

The only mention of the patentability of the junior parties' claims in this proceeding was with respect to our analysis as required under 37 C.F.R. § 1.601(n) to determine if an interference-in-fact existed between the parties to this interference and to determine if any of the junior parties' claims designated as corresponding to Count 1 should be designated as not corresponding to Count 1. In performing that analysis we made certain assumptions

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with respect to the parties' claims which were required by 37 C.F.R. § 1.601(n). Those assumptions were just that. They were not findings by us with respect to the patentability of the junior parties' claims.

To the extent the junior parties are attempting to establish that our analysis under 37 C.F.R. § 1.601(n) was in error because, our conclusion that inks and toners using fullerenes as pigments would have been obvious from the fullerenes themselves is contrary to the determination of the examiner during the prosecution of the Ziolo II, we simply remind the junior parties that we are not bound by the determination of the examiner below. Sze v. Bloch, 458 F.2d 137, 173 USPQ 498 (CCPA 1972) (board of interferences is not bound by the *ex parte* determination of the board on a "right to make" issue). Heymes v. Takaya 6 USPQ2d 1448, 1453, 1454 (Bd. Pat. App. & Int. 1988). Nor is there a presumption of validity under 35 U.S.C. 282 of an issued patent involved in an interference. See Perkins v. Kwon, 886 F.2d 325, 327, 12 USPQ2d 1308, 1310 (Fed. Cir. 1989); Lamont v. Berquer, 7 USPQ2d 1580, 1582 (BPAI 1988). Compare also In re Etter, 756 F.2d 852, 225 USPQ 1 (Fed. Cir. 1985) (no presumption of validity of an issued patent in reexamination proceeding); In re Sneed, 710 F.2d 1544, 218 USPQ 385 (Fed. Cir. 1983) (no presumption of validity of an issued patent in a reissue application).

Further, this *inter partes* proceeding is founded on an entirely different record than was considered by the examiner during

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the prosecution of Ziolo II. In performing our analysis under 37 C.F.R. § 1.601(n) we relied on certain evidence in this proceeding as the basis for our conclusion that fullerenes would have been expected to be useful pigments in inks and toners because they are obtained from and are a component of carbon black (graphitic soot) which evidence was not part of the record in the prosecution of Ziolo II.

We have not overlooked the junior parties' entreaty that we consider that fullerenes are said to have properties similar to graphite and that the junior parties established on the record during the prosecution of Ziolo II that graphite was not a suitable pigment for use in toners. Nevertheless, the basis for our determination that an interference-in-fact existed between the parties was founded on the disclosure in the evidence on which we relied that toners were known to comprise pigments dispersed in resins and that useful pigments or colorants included elemental carbon in more or less pure form, including carbon blacks and lampblacks. Thus, the relevance of the showing with respect to graphite *vis-à-vis* our conclusion founded on the disclosure of carbon blacks as useful pigments is not apparent on this record.

HUFFMAN ET AL.'S "RELATED" APPLICATIONS

The junior parties urge on page 18 of their main brief that Huffman et al., in Paper Number 66, refused to inform this Board about the existence of any pending, related patent applications directed to the process of making fullerenes. The junior parties

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suggest that the Huffman et al.'s refusal to disclose such information is tantamount to a violation of their duty of disclosure under 37 C.F.R. § 1.56 and that "Board sanctions should be mandatory for this matter."

In the first instance, we are only authorized to issue sanctions for failure by a party to comply with the rules or any order issued by us. See 37 C.F.R. 1.616(a). We never ordered the senior party to inform us of the existence of any pending application directed to the process of making fullerenes in macroscopic amounts. Since we never ordered Huffman et al. to notify us of the existence of such applications, they cannot have violated an order we never issued. Even assuming, *arguendo*, such applications exist, the mere existence of such applications does not establish the materiality of such applications to this proceeding. We also observe that 37 C.F.R. § 1.656(b) (2) does not require a party to identify related applications but only "any related appeal or interference which is pending before the Board, or which has been decided by the Board," as "related" is defined in the last sentence of rule.

Finally, in their brief, Huffman et al. have included a statement of other related appeals and interferences. Therein Huffman et al. state unequivocally that they know of no appeals or interferences related to this proceeding (see page 1 of their brief). The rule requires no more and we have no reason to doubt Huffman et al.'s representation.

Nevertheless, we acknowledge receipt by electronic facsimile on June 4, 1998, of a paper directed to the attention of one member of this merits panel (Paper Number 83). We are unable to find any indication in said paper that this communication was served on the junior parties. However, 37 C.F.R. § 1.646 (a) requires all papers filed in an interference proceeding to be served on any and all parties. Accordingly, a copy of Paper Number 83 is attached to this decision and shall serve as the service required by the rule.

HUFFMAN ET AL.'S EXHIBIT 3

The junior parties have asserted in their reply brief that we should not consider Exhibit 3 (the videotape) in our deliberations because the tape constitutes hearsay (see page 20, paragraph 24 of the reply brief). Nonetheless, beyond their characterization of the tape as hearsay, the junior parties have not explained the basis for their hearsay objection to the tape. More significantly, the junior parties' briefs are replete with references to and reliance on the videotape for a variety of purposes beyond those portions of the tape which the junior parties have characterized as "admissions against interest". Even more significantly, the junior parties did not file a proper motion to suppress the tape under 37 C.F.R. § 1.656(h). We have considered the videotape to the extent indicated in this opinion and shall not suppress same as hearsay.

STATUTORY DISCLAIMER OF CLAIM 21 OF U.S. PATENT 5,114,477

In Paper Number 71, the junior parties have filed a statutory disclaimer of claim 21 in the Mort et al. patent, U.S.

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Patent Number 5,114,477. Pursuant to 37 C.F.R. § 1.662(c), the disclaimer deletes claim 21 "from being involved in the interference." Because the disclaimer does not disclaim all the claims of Mort et al.'s patent designated as corresponding to Count 1, the disclaimer is not treated as a request for adverse judgment against Mort et al. The disclaimer has no other effect on this proceeding.

THE PARTIES' "STATEMENT OF FACTS"

At pages 3 through 9 of their brief and at pages 7 through 9 of their main brief and pages 15 through 20 of their reply brief, the senior party and the junior parties, respectively, have set forth proposed findings of fact. Additionally, Huffman have attached to their brief an attachment entitled "**FINDINGS OF FACT**". We acknowledge receipt of the findings but decline to either accept or reject the findings.

HUFFMAN ET AL.'S MATERIALS FILED UNDER 37 C.F.R. § 1.682

Attached to their brief, Huffman et al. have included a paper captioned "**SUBMISSION UNDER 37 C.F.R. §1.682**". We have considered the submission to the extent indicated above. We repeat that, contrary to Huffman et al.'s representations that the articles referenced therein rebut our finding that Smalley et al. "discovered" fullerenes, we find the articles establish that Smalley et al. are, indeed, recognized as the first to discover fullerenes.

OUTSTANDING EX PARTE ISSUES

Based on the record before us, it is herein ORDERED that the outstanding rejections of Huffman et al.'s claims corresponding to Count 1 shall be addressed by Huffman et al. before the examiner in light of any relevant findings herein when Huffman et al.'s involved application is returned to the examining group after this proceeding is terminated.

JUDGMENT

In light of our *sua sponte* granting of the junior parties' motion under 37 C.F.R. § 1.633(c)(4) based on our conclusion that claims 1 through 6 of Ziolo's U.S. Patent Number 5,232,810 do not correspond to Count 1, on this record, Ronald F. Ziolo is entitled to his U.S Patent Number 5,232,810 containing claims 1 through 6.

Judgment as to the subject matter of Count 1 is awarded against Joseph Mort and Mary A. Machonkin, a junior party. Joseph Mort and Mary A. Machonkin, a junior party, are not entitled to their patent containing claims 1 through 20 corresponding to Count 1.

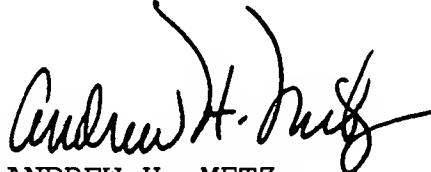
Judgment as to the subject matter of Count 1 is awarded against Ronald F. Ziolo, a junior party. Ronald F. Ziolo, a junior party, is not entitled to his patent containing claims 1 through 18 corresponding to Count 1.

Judgment as to the subject matter of Count 1 is awarded against Donald R. Huffman and Wolfgang Krätschmer, the senior party. Donald R. Huffman and Wolfgang Krätschmer, the senior party are not

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entitled to a patent containing claims 82 and 87 of their involved application corresponding to Count 1.

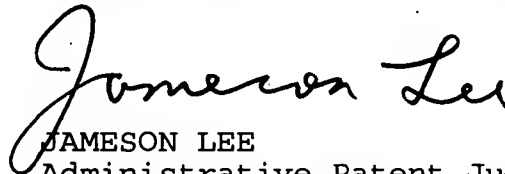
Judgment as to the subject matter of Count 1 is awarded to Donald R. Huffman and Wolfgang Krätschmer, the senior party. On the record before us, Donald R. Huffman and Wolfgang Krätschmer, the senior party are entitled to a patent containing claims 45 through 81, 83 through 86 and 88 through 180 of their involved application corresponding to Count 1.



ANDREW H. METZ)
Administrative Patent Judge)



RICHARD E. SCHAFER) BOARD OF PATENT
Administrative Patent Judge) APPEALS AND
INTERFERENCES)



JAMESON LEE)
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